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writing—all of it brilliant. Nevertheless, he represents an ideal of accomplishment and achievement toward which the English university teacher more or less consciously strives. In America, on the other hand, this notion of the scholar and man of letters combined in one person is but dimly conceived by most members of the academic body; and it has apparently never entered the heads of many college trustees. We have had a Longfellow and a Lowell; and among the living we might name a few more who enjoy something beyond parochial fame; but the vast majority can hope to be nothing more than competent teachers and the editors of useful text-books—a respectable but not an inspiring career.

The reasons for this shortcoming—if we may use so harsh a word—are not far to seek. We need only refer to the fact that in but few places in this country is any tradition of culture firmly established. We have not half a dozen university seats where a man like Jebb would have received strong encouragement, to say nothing of stimulation. Moreover, he would be something of an alien within the university itself. The steady mediocrities and the glib talkers who figure so largely in our boards of trustees and who are not infrequently chosen to college presidencies, are naturally biased by an unconscious but none the less genuine distrust of men who are not of their own kind. These authorities, though they nominally desire to encourage scholarly production, really like best the solid teacher who carries a huge amount of class and committee work capably and without flinching, or that other one who dissipates his energies in keeping the college constituency “warm”—talking at all the teachers’ meetings and similar gatherings. These are the activities that, in the eyes of college administrators, actually count, and therefore win solid rewards. Nor is this surprising. Most American colleges are much straitened for money. The one thing which they must do is to maintain the class-room instruction as well as may be, and keep growing in numbers so as to appeal to the public as an institution deserving of more liberal support. To these two ends other aims are, by the pressure of a growing population,

clamorous alumni, and an empty treasury, ruthlessly sacrificed.

To the merchants, manufacturers and bankers, who constitute the backbone of our intelligent and public-spirited boards of trustees, it appears absurd that a professor should find fifteen or twenty hours of class-work a week a heavy load. Three or four hours of teaching or lecturing a day, for nine months in the year, seems to your business man mere play. Yet the truth is that six or eight hours a week of first-rate class work, informed as to the latest results of research, thoroughly digested, and carefully presented, will keep a professor busy. If he attempts more, he degenerates into a machine; he offers the same lectures and cracks the same jokes year after year; he becomes a mere dealer in routine. That is, he has no chance to refresh himself, to get new points of view, in fine, to think. For the professor the time spent in experimentation that is not immediately productive of striking results, in reading, in mulling over his ideas while he walks, plays golf, or rides the bicycle, and in discussing with a colleague the newest theory as to the constitution of matter or the recently discovered fragment of Menander, is not pure loafing or genteel recreation. This is the very process by which he subjugates his facts, assimilates his learning, and ripens his scholarship. But the unhappy truth is that thinking is a luxury in which our average underpaid and over-driven college teacher can not afford to indulge. Whatever his personal inclinations, he knows that the people to whom he must look for approval, for means to extend his department, for library books and laboratory apparatus, for bread and butter for himself and his children—that these people are primarily interested in other things; and that he is at liberty to do only so much thinking as is compatible with devoting all his time and energy to classes and committees.—*New York Evening Post*.

SCIENTIFIC BOOKS

Text Books of Physical Chemistry. Stoichiometry. By SYDNEY YOUNG, D.Sc., F.R.S., Professor of Chemistry in the University of

Dublin. Together with an introduction to the Study of Physical Chemistry, by Sir WILLIAM RAMSAY, K.C.B., F.R.S. Pp. lxi + 381. London, Longmans, Green and Co. 1908.

The term stoichiometry which originally was applied to the calculation of chemical equivalents has been extended by Ostwald to include not only the determination of atomic and molecular weights, but the study of the properties of solids, liquids, gases and solutions as well. It is in this broader sense that the author uses the word in the title of the present volume, which may be regarded as the most satisfactory of this admirable series of texts which we owe to Professor Ramsay.

Unfortunately many of the text-books which appear nowadays are characterized by a sort of inbreeding, each one reading like a reasortment of the stereotyped pages of its predecessors. This fault the author has avoided to a remarkable degree. The interest of the reader is held not only by the refreshing novelty of the treatment but also by the introduction of much comparatively unfamiliar material and many new tables and figures. If a criticism were to be made it would be that the author's zeal in the exposition of experimental results has caused him to neglect those fundamental thermodynamic considerations which would have added much to the symmetry and logical completeness of his work.

Never has a simple experiment, carried out with the highest accuracy and scientific honesty, been rewarded by more signal consequences than Lord Raleigh's determination of the density of nitrogen. The continued study of the small discrepancies which he found, and which might have been glossed over by a less critical observer, have led directly on the one hand to the discovery of the five new elements of the argon family, and on the other to the complete revision of our accepted table of atomic weights. The work of D. Berthelot, Guye and others has established the complete validity, at very small gas pressures, of the principle of Avogadro, and has enabled them by physico-chemical means

alone to determine the atomic weights of a considerable number of elements with an accuracy which rivals that attained in the most refined chemical analyses. How this method has led to a notable amendment of Stas's value for the atomic weight of nitrogen, and thence indirectly to a modification of many other important atomic weights, is fully described by the author. He discusses also some of the more important determinations which have been made by chemical means and shows the futility in such cases of the calculation of the so-called probable error, a point which he might well emphasize more strongly.

In the chapters on liquids, the critical state, and liquid mixtures Professor Young deals with subjects to which his life has been devoted. The reader expects therefore a comprehensive and stimulating treatment and he is not disappointed.

The introduction to physical chemistry by Professor Ramsay which is included in this book has already appeared in another volume of the series. It is a very compact statement, along conventional lines, of the historical development of chemical theory. The reviewer notes one paragraph, on solubility, page xxxv, which may be very misleading to a beginner.

GILBERT N. LEWIS

Behind the Scenes with the Mediums. By DAVID P. ABBOTT. Chicago, The Open Court Publishing Co. 1906. 8vo, pp. 328.

To the psychologist or layman interested in the *modus operandi* of deception, this painstaking book by Mr. Abbott will prove as invaluable as it is interesting. It brings home with renewed emphasis the technical expertness that goes into the performances of the modern mystifier, particularly of the type that appeals to the spiritualistic or other prepossessions of the sitters. It emphasizes equally how unevenly matched must be this mystifier and the ordinary or even the extraordinary investigator who interprets his inability to discover how the effect is produced into a warrant for the belief that something defying natural experience has been witnessed. In the face of such manifold and complex procedures, the assurance of even the sincere